

Notice of Allowability

Application No.

10/035,606

Examiner

Shouxiang Hu

Applicant(s)

GALLIA ET AL.

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the 1-19-2007 amendment.
2. ☒ The allowed claim(s) is/are 1-3, 7, 9, 10 and 21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.


THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20070525.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


SHOUXIANG HU
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Steve Hanke (RN: 58,076) on May 16, 2007.

The application has been amended as follows:

IN THE CLAIMS

Claim 1 (Currently Amended): A silicon-on-insulator semiconductor device comprising:

an insulative layer formed overlying a substrate;

a source region and a drain region formed in a semiconductor layer overlying the insulative layer, the source region and the drain region comprising a material having a first conductivity type;

a body region in the semiconductor layer and disposed between the source region and the drain region and overlying the insulative layer, the body region comprising a material having a second conductivity type;

a gate insulative layer overlying the body region;

a gate region overlying the gate insulative layer;

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a diode circuit comprising back-to-back diodes formed in the semiconductor layer
~~connected at their anodes with a first cathode of the back-to-back diodes conductively~~
~~coupled,~~ the back-to-back diodes having two PN-junction-type diodes and having first
and second end regions of the first conductivity type at two ends of the back-to-back
diodes, the first end region being electrically connected to the source region;

~~and a conductive connection coupling~~ connecting the gate region to a second
~~cathode-~~ the second end region of the back-to-back diodes by connecting the gate
region to a metallization layer above the substrate and connecting the metallization
layer to the second end region; and

an isolation region adjacent to and between the source region and the first end
region of the back-to-back diodes,

wherein the gate insulating layer is protected by the back-back diodes from
damage by a plasma by exposing the back-to-back diodes to the plasma during the
fabrication of the silicon-on-insulator semiconductor.

Claim 2 (Currently Amended): The device of Claim 1, wherein the ~~conductive~~
~~connection comprises: a conductive region~~ the metallization layer is ~~formed overlying~~
~~over the gate region; and a metal trace coupling the conductive region to the diode~~
~~circuit.~~

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Claim 3 (Currently Amended): The device of Claim 2, wherein ~~the conductive region comprises a metallization layer~~ a metal trace couples ~~coupling the conductive region~~ metallization layer to the diode circuit.

Claims 4 - 6 (Canceled)

Claim 7 (Currently Amended): The device of Claim 1, wherein the back-to-back diodes are separated from each other by an insulative region.

Claim 8 (Canceled)

Claim 9 (Original): The device of Claim 1, wherein the source region and the drain region are formed from an n-type material.

Claim 10 (Original): The device of Claim 1, wherein the source region and the drain region are formed from a p-type material.

Claims 11-16 (Cancelled)

Claims 17 - 20 (Canceled)

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Claim 21 (Currently Amended): The device of Claim 1, wherein the drain region is not ~~conductively coupled~~ directly connected to either the source region or the gate region.

Claim 22 (Canceled)

Allowable Subject Matter

Claims 1-3, 7, 9, 10 and 21 are allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References A-D are cited as being related to diode-based protection structures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on 571-272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SH
May 25, 2007



SHOUXIANG HU
PRIMARY EXAMINER